

EECA /EPIA

Electronics industry migration

Munich, 12 November 2002

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EPIA and DECISION

Migration of electronics production: an EECA-EPIA survey

EPIA is the Packaging and Interconnection section of EECA, the European Electronic Components Association

EPIA has undertaken a survey of the migration of electronics production throughout the world, with particular focus on:

- **the future of European electronics production, and in particular Eastern Europe**
- **the impact of electronics production migration on component markets**

DECISION:

European electronics and components consulting

DECISION is a consulting company specialising in:

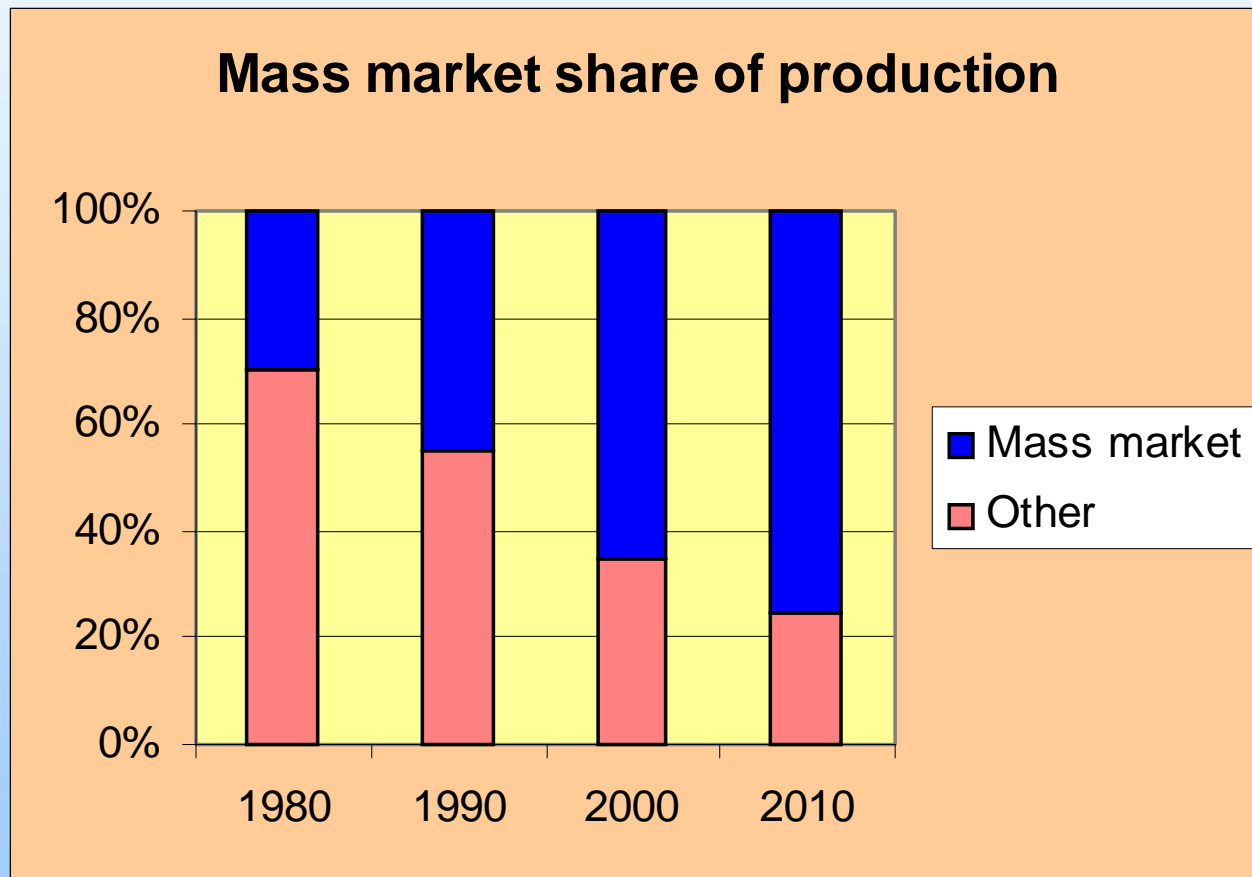
- electronics**
- electronic components**
- aerospace and defence**
- power equipment**

DECISION has in particular two multiclient products:

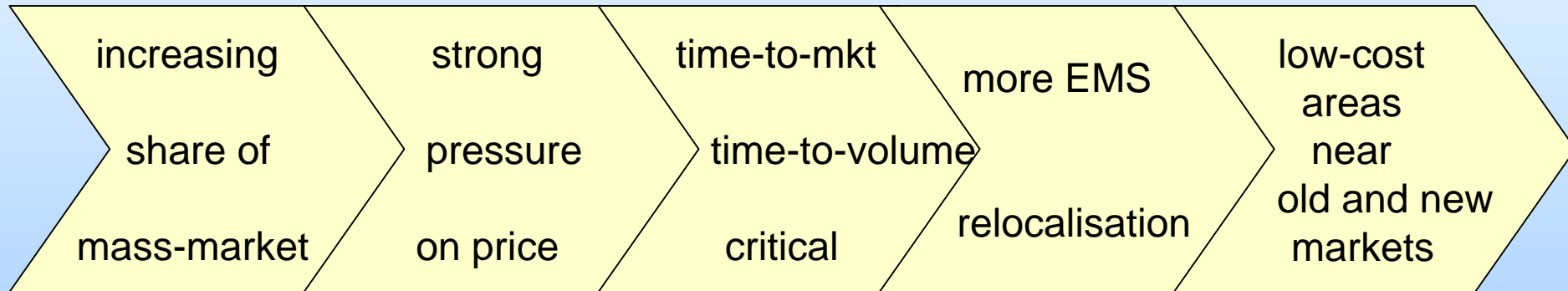
- the European electronics industry and markets**
- the European passive and electro-mechanical component markets**

Localisation factors: new trends

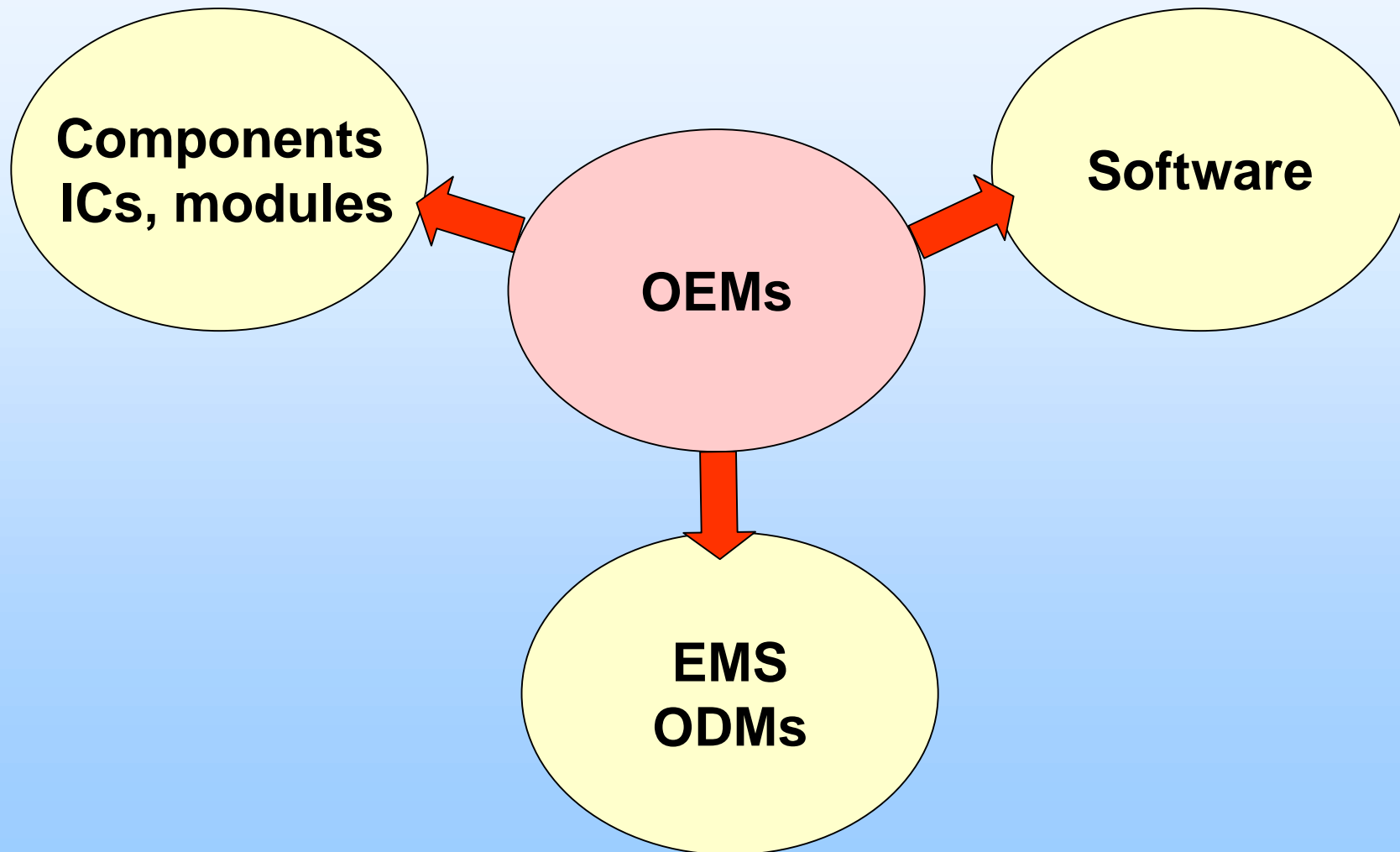
Generalisation of mass-market attitude



Generalisation of mass-market attitude



Outsourcing: the shrinking OEM?



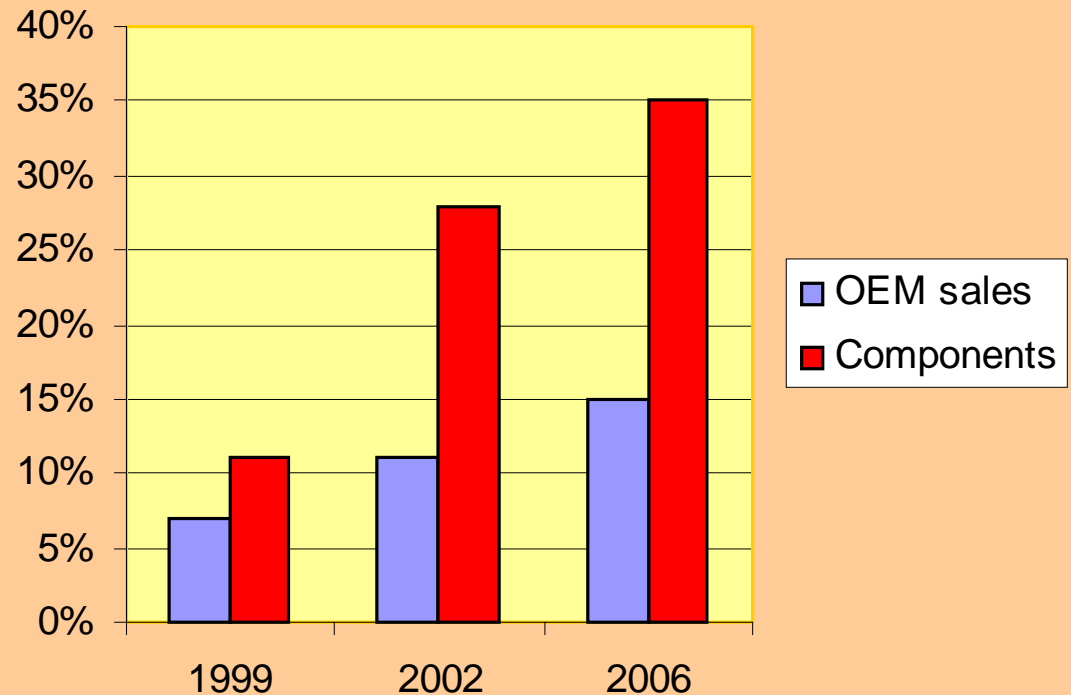
EMS share of electronic activity growing

But:

- since 2000 one third of EMS work-force laid off (120 000 people)

- what with ODMs, also growing fast (9% of OEM sales in 2002)

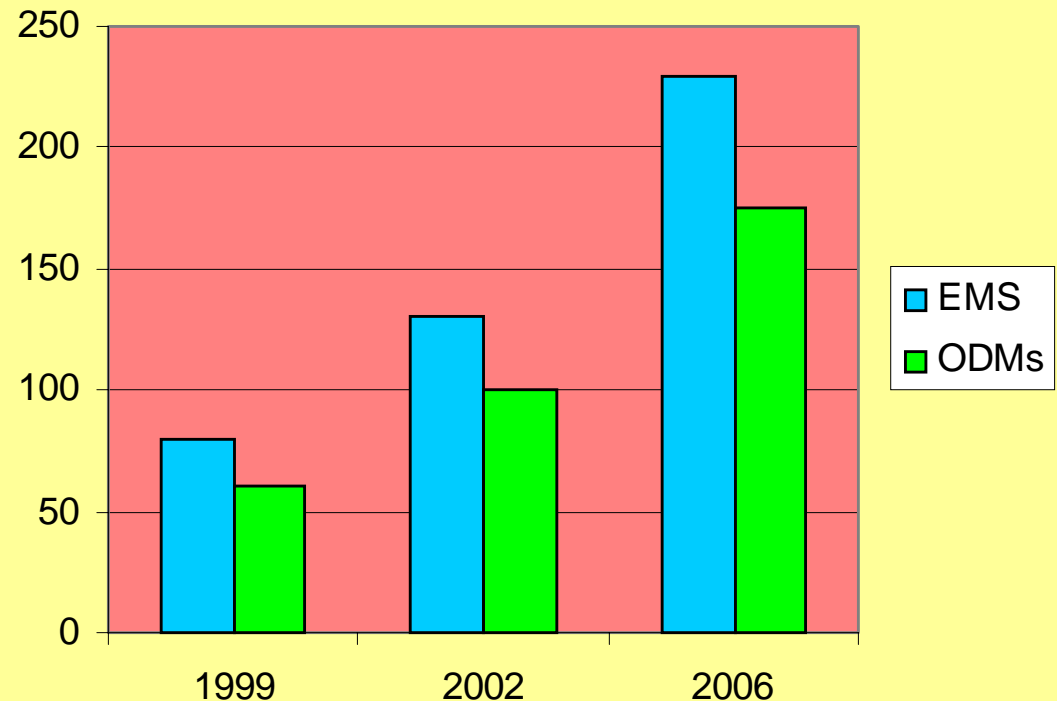
World EMS share



EMS and ODMs

- EMS
 - American dominated
 - active in all regions
 - active in all sectors
- ODMs
 - Asian dominated (in particular Taiwan)
 - active mostly in Asia
 - active mostly in computer products

EMS and ODM revenue (M\$)



Specific patterns

➤ *Mobile phones*

- cost of manpower is not critical
- workers spend less than 5 minutes on each phone (15 minutes 3 years ago)
- Nokia will not outsource more than 20%
- sites are where markets are
- China is the largest market and the largest production area

➤ *Automotive*

- the market is very regional
- auto-makers want their suppliers nearby
- logistics are important
- Eastern Europe is attractive for European automakers

Specific patterns

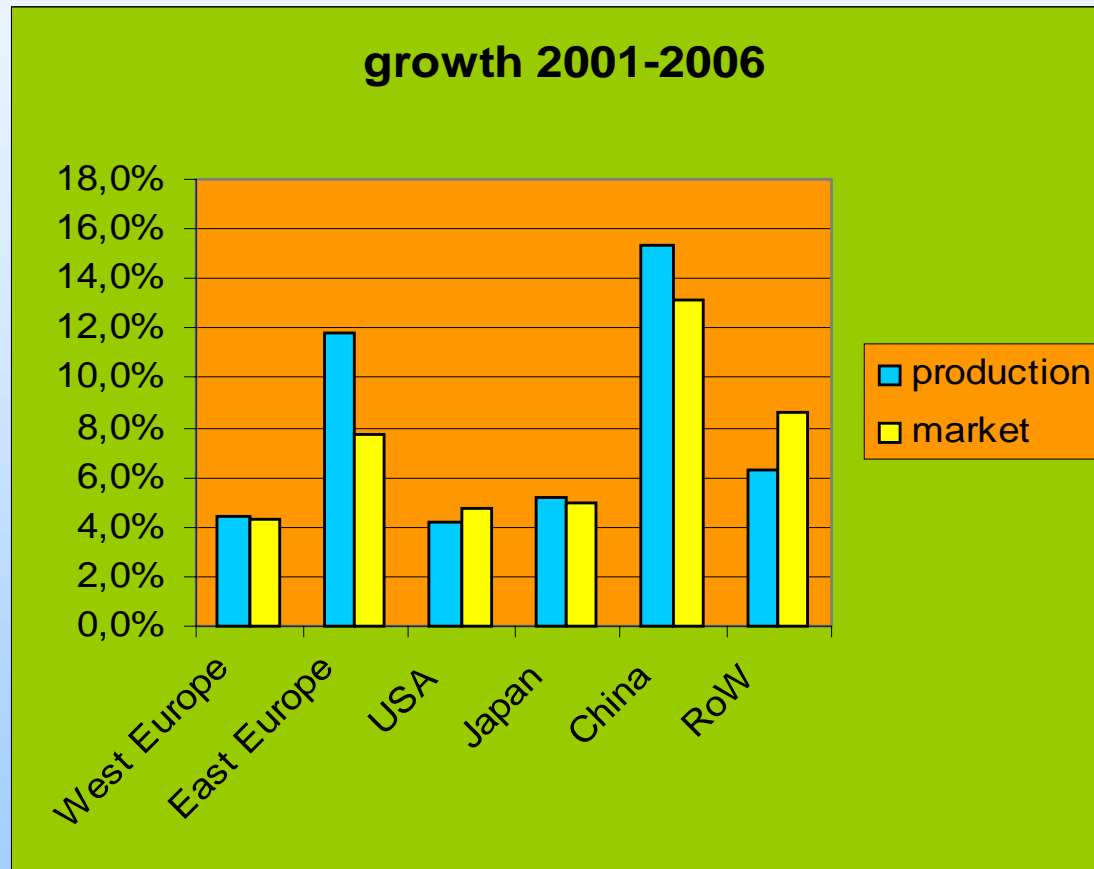
➤ PCs

- EMS have a large share of PC board assembly
- ODMs are very active in new segments such as notebook PCs
- desk-top PC activity is very fragmented between board assembly, drives, peripherals and final assembly

➤ Industrial

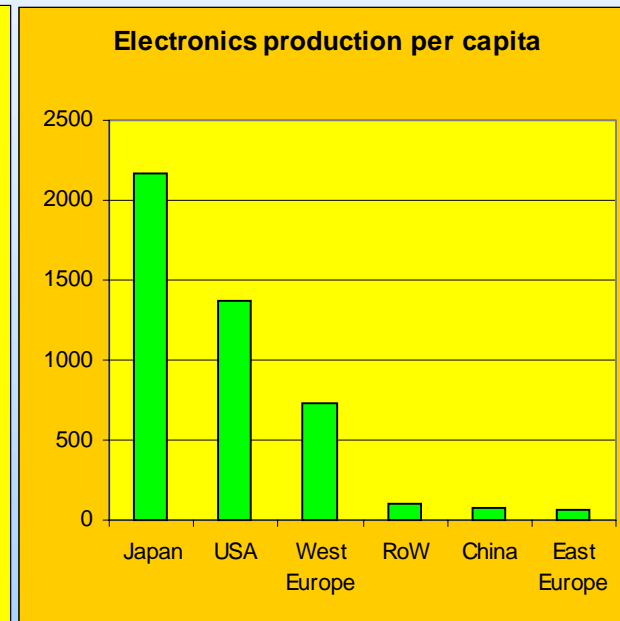
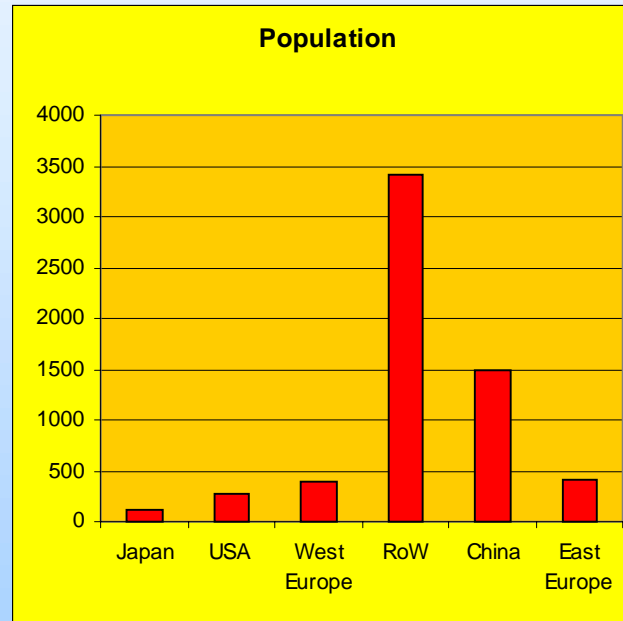
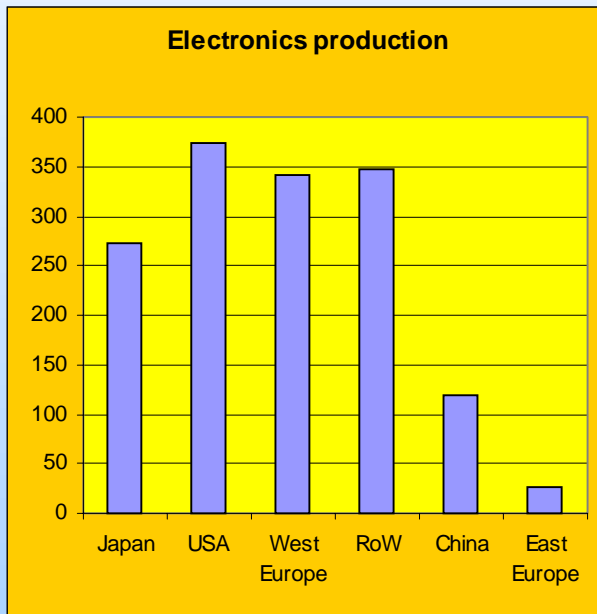
- products and modules are increasingly standard mass-produced building blocks
- but the end-solution is still custom-tailored and dedicated
- power components are critical for industrial applications

Production and markets: follow my leader



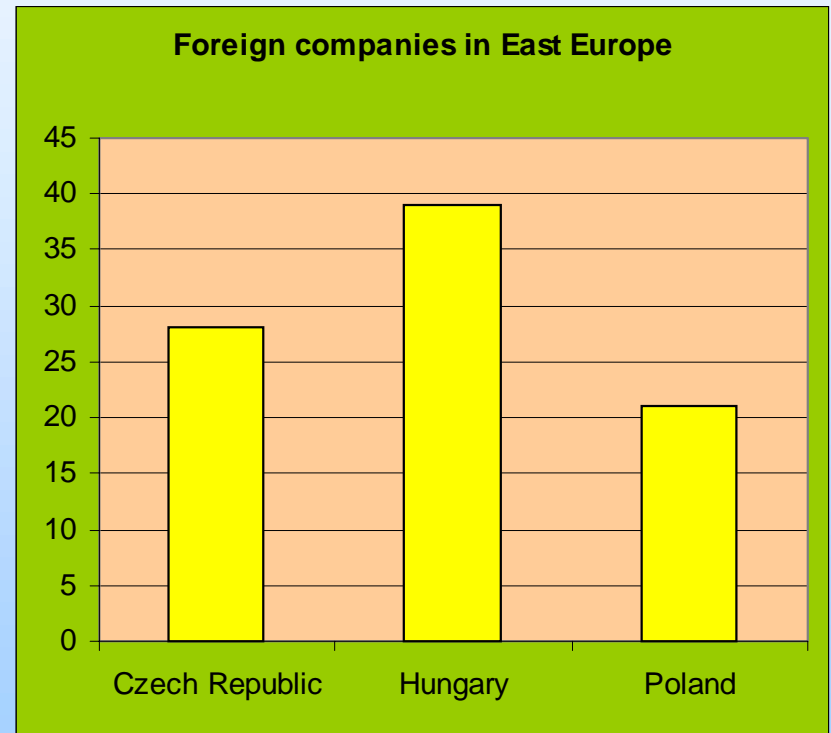
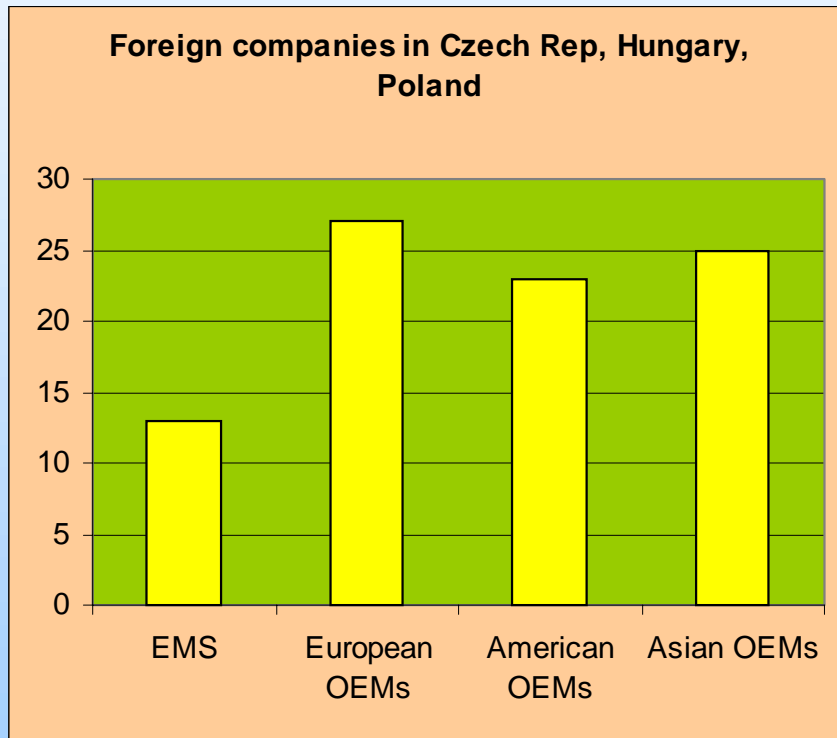
**Basically, production follows markets,
AND develops markets**

Electronics production unequally shared



Two new electronic stars, Eastern Europe and China

Everyone goes to Eastern Europe



Why go to Eastern Europe?

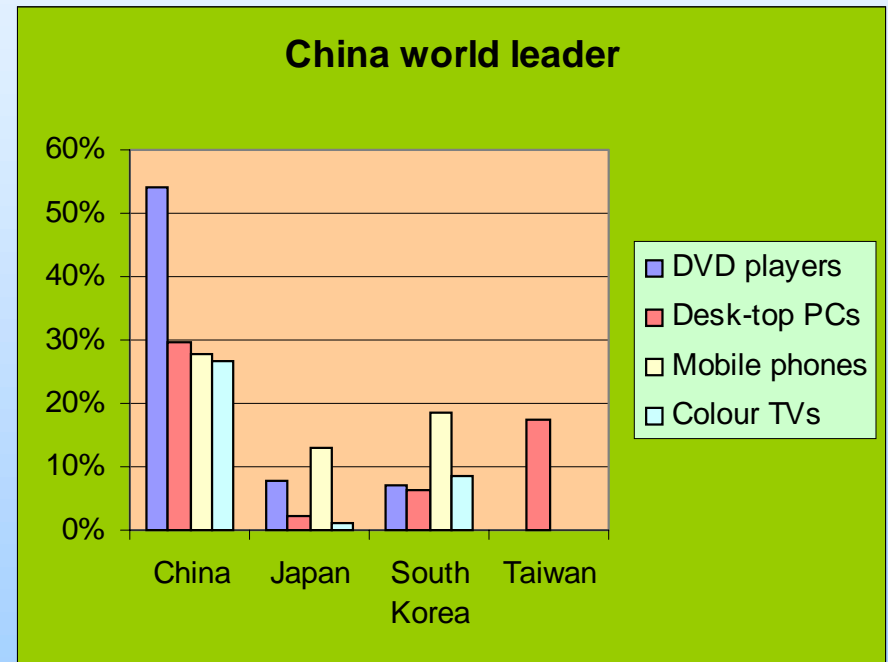
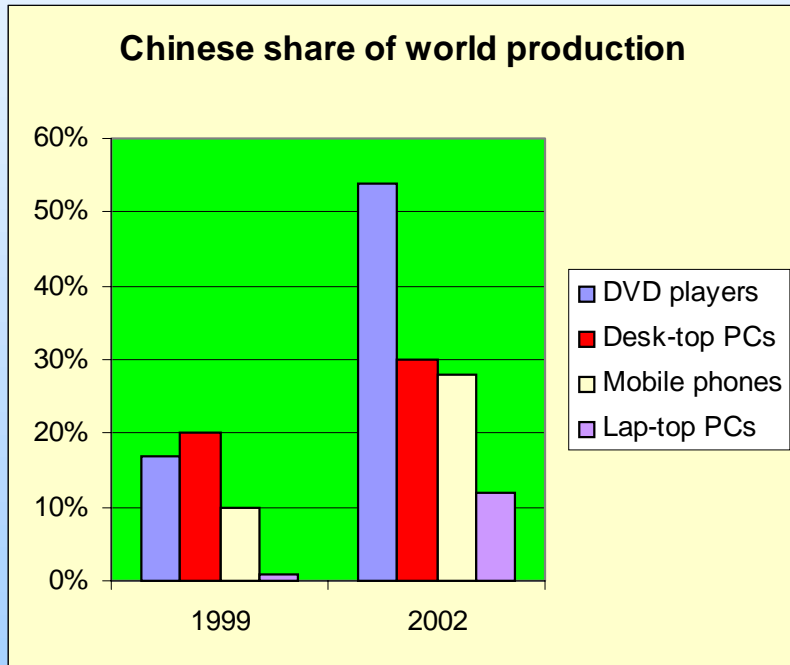
Excellent local resources:

- **low cost labour, skilled and well-trained**
- **collapse of socialist electronics industry leaves available labour**
- **proximity to Western Europe, and fast growing local markets**
- **excellent R&D and software capabilities**

A large share of Eastern Europe will soon become part of the European Union

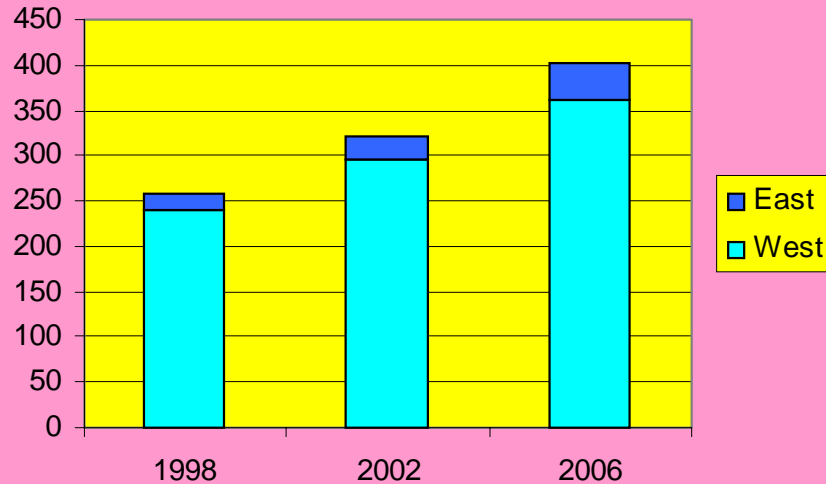
- **so migration to Eastern Europe is more a regional location inside the EU (like once Portugal, Ireland, Scotland...)**

China soon world leader?

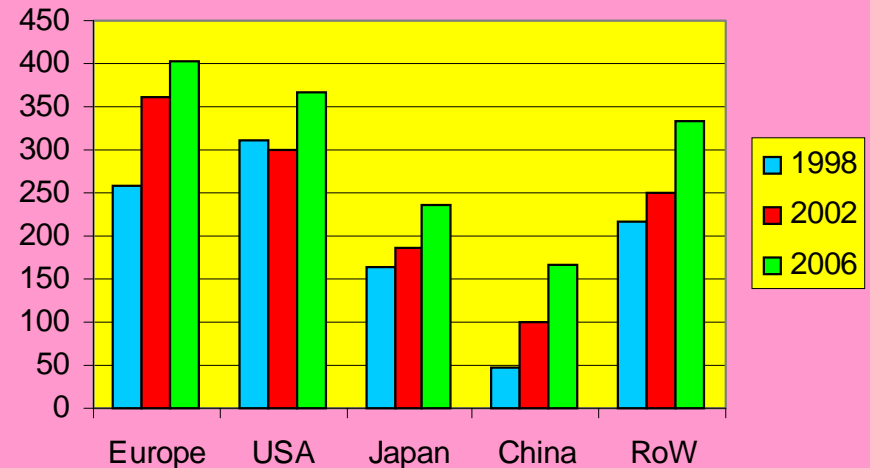


China is the new major player

Eastern Europe still small



China climbing fast



The China Gold Rush: why?

China is rapidly becoming the largest market in the world

The electronics industry is pushed by the Chinese government as one of the “Four Pillars” of economic growth

China has an abundant supply of cheap and skilled labour (including well-trained engineers), and of cheap land

A full complement of supporting industries, including electronic components, is developing fast

The great coastal sites now have excellent infrastructures (telecoms, ports, power supply...)

The China Gold Rush: where?

Southern China benefits from its **Hong Kong connection**

A lot of foreign investments for **computer manufacturing**
70% of local supplier base are joint-ventures with Hong Kong
and Taiwan companies

Eastern China has an abundant supply of highly skilled industrial workers
Eastern China is very **strong in computer products**.

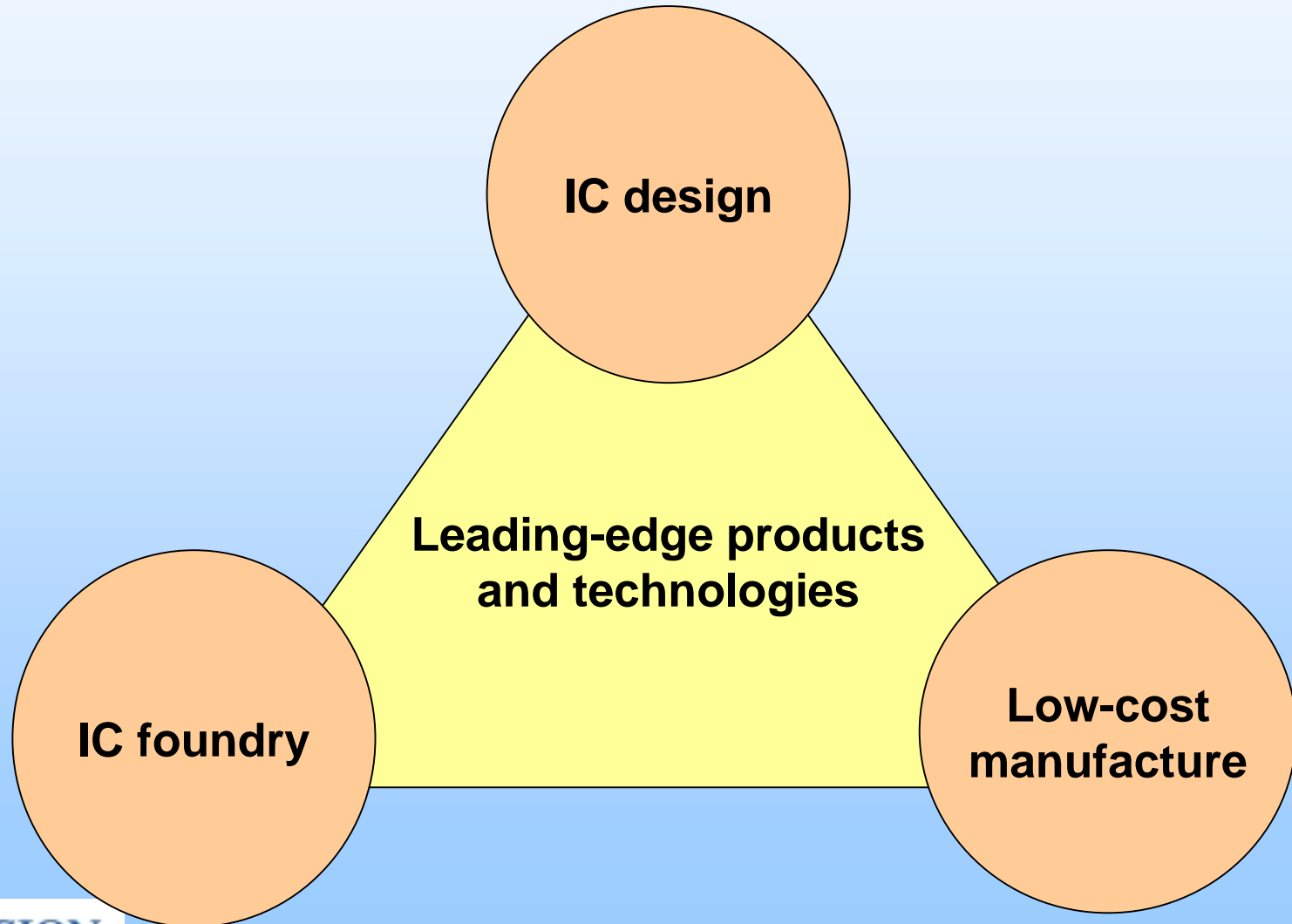
Greater Shanghai is a destination for **many Taiwan investors**.
Local makers include ASUS, Twinhead, Legend, Toshiba, Hewlett Packard

Northern China, prestigious universities and colleges

Pioneering role in the development of the IT industries

Many industry giants in **Beijing, the Silicon Valley** of China
Transportation **problems**, insufficient supply of electronic components

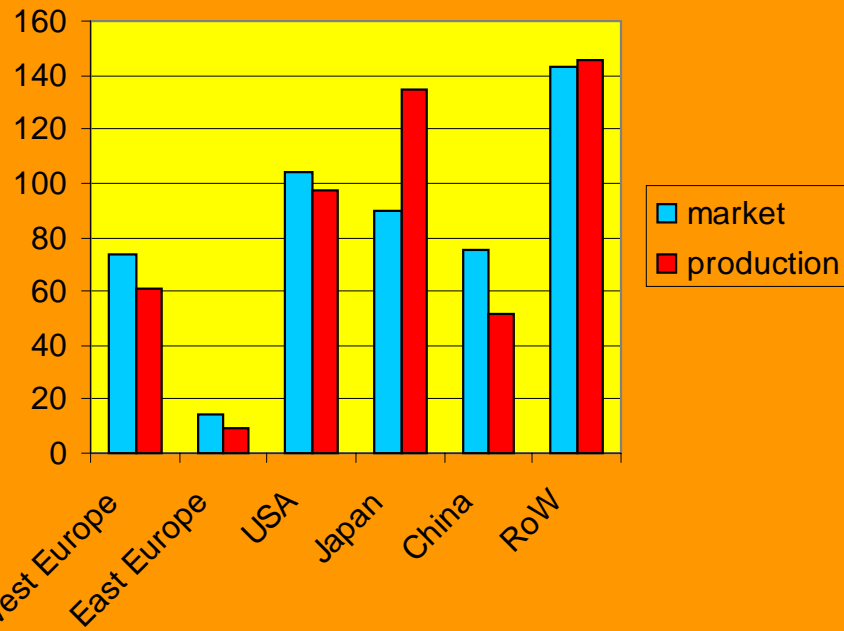
China's development strategy



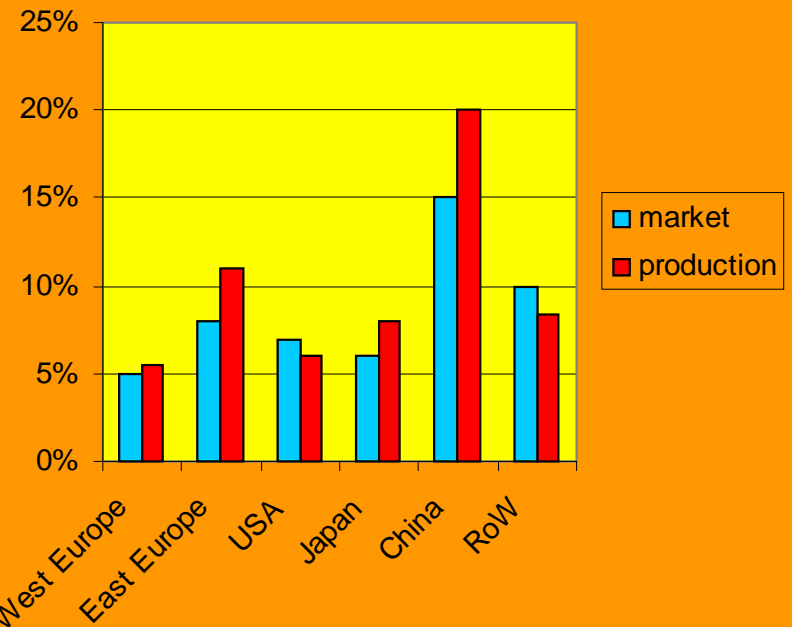
Impact on components

Component markets and production

Component markets & production, 2006



Component growth 2001-2006



Available component base is a critical factor

South East Asia and Mexico: attractive for high volume productions
low costs
extensive local component supply base

Eastern Europe: limited by the small local component supply base

North Africa and the Middle East: no component supply base

Central and South America: production for local markets for tax reasons

Global sourcing, local procurement

- **Supplier choice and contract negotiation are global**
- **Best prices and specifications are on a world-wide basis**
- **The Chinese market-place is increasingly the reference**
- **Other component suppliers must be aware of these reference values**
- **Many OEMs will not outsource this strategic function**

- **Current orders and supplies are managed by the local plants**
- **local procurement can be managed by EMS**
- **This is easier if there is a local supply base**